FCC PART 15E
TEST REPORT
No.24T04Z100077-003

for

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

T433E

FCC ID: 2ACCJB218

with

Hardware Version: 05

Software Version: BM35

Issued Date: 2024-03-01

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

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Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
24T04Z100077-003	Rev.0	1st edition	2024-03-01

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2. Testing Location

Conducted testing Location: CTTL(Huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

Radiated testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, 100191, P. R. China

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project date

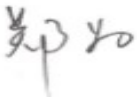
Testing Start Date: 2024-01-22

Testing End Date: 2024-03-01

1.5. Signature

Dong Jiaxuan

(Prepared this test report)



Zheng Wei

(Reviewed this test report)

Pang Shuai

(Approved this test report)

2. Client Information

2.1 Applicant Information

Company Name:	TCL Communication Ltd.
Address:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
City:	Hong Kong
Country:	China
Telephone:	+86 755 3661 1621
Fax:	+86 755 3661 2000-81722

2.2 Manufacturer Information

Company Name:	TCL Communication Ltd.
Address:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
City:	Hong Kong
Country:	China
Telephone:	+86 755 3661 1621
Fax:	+86 755 3661 2000-81722

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/UMTS/LTE Mobile phone
Model name	T433E
FCC ID	2ACCJB218
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Nominal Voltage	3.85V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
UT09a	355518370201990/ 355518370202006	05	BM35	2024-01-31
UT03a	355518370000178/ 355518370000186	05	BM35	2024-01-31

*EUT ID: is used to identify the test sample in the lab internally.

UT03a is used for Conduction test, UT09a is used for Radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Note	Manufacturer
AE1-1	Battery	TLi028C9	Fenhua New EnergyCo.,Ltd
AE1-2	Battery	TLi028CB	Shenzhen Aerospace Electronic Co., Ltd.
AE2-5	Charger	UT-681E-5100UY	Shenzhen Baijunda Electronic Co.,Ltd
AE2-6	Charger	UT-681A-5100UY	Shenzhen Baijunda Electronic Co.,Ltd
AE2-7	Charger	UT-681B-5100UY	Shenzhen Baijunda Electronic Co.,Ltd
AE2-8	Charger	UT-580S-5100UY	Shenzhen Baijunda Electronic Co.,Ltd
AE3	USB cable	HE1501-000354-000	Shenzhen Xinchengyuteng Co.,Ltd
AE4	Headset	HE0501-000316-000	Shenzhen Xinchengyuteng Co.,Ltd

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment under Test (EUT) is a model of GSM/UMTS/LTE Mobile phone with integrated antenna and inbuilt battery.

It consists of normal options: travel charger, USB cable.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

3.5. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor k=2.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2021
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033 D02	General U-NII Test Procedures New Rules v02r01	2017-12

5. Laboratory Environment

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. Test Results

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Output Power	15.407	/	**P**
Peak Power Spectral Density	15.407	/	**P**
Occupied 26dB Bandwidth	15.403	/	**P**
Band edge compliance (Radiated)	15.209	/	**P**
Transmitter spurious emissions (Radiated)	15.407	/	**P**
AC Powerline Conducted Emission (150kHz- 30MHz)	15.407	/	**P**
99% Occupied bandwidth	/	/	**P**
Transmit Power Control	15.407	/	**NA**

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

CTTL has evaluated the test cases as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.

This report only deals with the WLAN function among the features described in section 3.

6.3. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	26°C
Voltage	3.85V
Humidity	44%

7. Test Facilities Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2024-07-04
2	Vector Signal Analyzer	FSW67	104051	Rohde & Schwarz	1 year	2024-03-06
3	LISN	ENV216	101200	R&S	1 Year	2024-06-04
4	Test Receiver	ESCI	100344	R&S	2 years	2025-02-20
5	Attenuator	10dB/2W	/	Rosenberger	/	/
6	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESW44	103144	R&S	1 year	2024-11-26
2	EMI Antenna	VULB 9163	01222	SCHWARZBECK	2 years	2025-01-28
3	EMI Antenna	3115	6914	ETS-Lindgren	1 year	2024-05-07
4	EMI Antenna	3116	2663	ETS-Lindgren	2 years	2024-11-22

Test Item	Software	Manufacturer
Conducted emission	EMC32 V8.53.0	R&S
Radiated emission	EMC32 V11.50.00	R&S

8. Measurement Uncertainty

8.1 Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

8.2 Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

8.3 26dB Emission Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4 Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

8.5 Spurious Emissions

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
30MHz ≤ f ≤ 2GHz	1.22
2GHz ≤ f ≤3.6GHz	1.22
3.6GHz ≤ f ≤8GHz	1.22
8GHz ≤ f ≤12.75GHz	1.51
12.75GHz ≤ f ≤26GHz	1.51
26GHz ≤ f ≤40GHz	1.59

Radiated (k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	4.92
30MHz ≤ f ≤ 1GHz	4.72
1GHz ≤ f ≤18GHz	4.84
18GHz ≤ f ≤40GHz	5.12

8.6 AC Power-line Conducted Emission

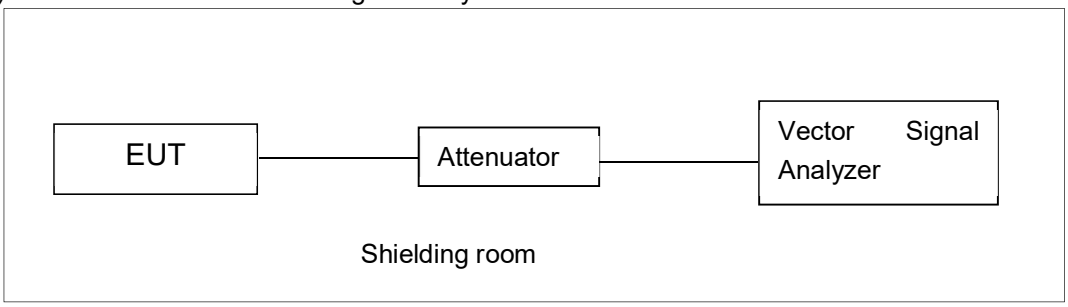
Measurement Uncertainty : 3.08dB,k=2

ANNEX A: Detailed Test Results

A.1. Measurement Method

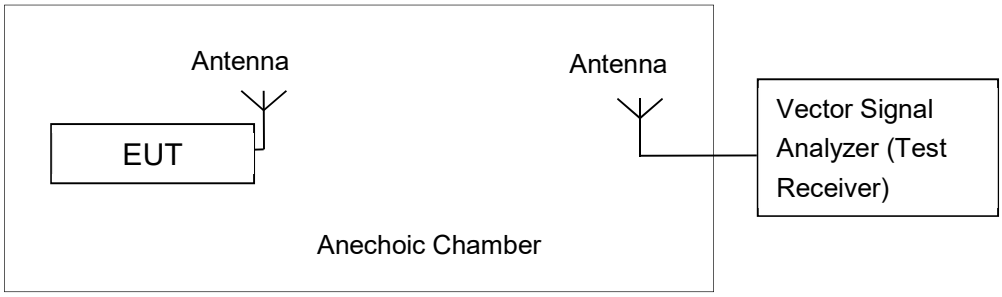
A.1.1. Conducted Measurements

1). Connect the EUT to the test system correctly.
2). Set the EUT to the required work mode.
3). Set the EUT to the required channel.
4). Set the spectrum analyzer to start measurement.
5). Record the values. Vector Signal Analyzer



A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,
Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;
Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 3MHz;



The measurement is made according to KDB 789033
The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

A.2. Maximum output Power

Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	24dBm
	5250MHz~5350MHz	24dBm or 11+10logB
	5470MHz~5725MHz	24dBm or 11+10logB

Limit use the less value, and B is the 26dB bandwidth.
The measurementmethod SA-2 is made according to KDB 789033

A.2.1 Antenna Gain

Antenna gain is -1.27dBi and the value is supplied by the applicant or manufacturer.

A.2.2 Maximum output Power-Conducted

EUT ID: UT03a

Measurement Results:

802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	12.91	\	\	\	\	\	\	\
	5200MHz	12.96	\	\	\	\	\	\	\
	5240MHz	12.42	\	\	\	\	\	\	\
	5260MHz	12.78	\	\	\	\	\	\	\
	5280MHz	12.69	\	\	\	\	\	\	\
	5320MHz	12.18	\	\	\	\	\	\	\
	5500MHz	12.94	\	\	\	\	\	\	\
	5580MHz	13.04	\	\	\	\	\	\	\
	5700MHz	13.17	\	\	\	\	\	\	\
	5720MHz	13.29	\	\	\	\	\	\	\

The data rate 6Mbps is selected as worst condition, and the following cases are performed with this condition.

802.11n-HT20 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz	10.80	\	\	\	\	\	\	\
	5200MHz	10.76	\	\	\	\	\	\	\
	5240MHz	10.75	\	\	\	\	\	\	\
	5260MHz	10.71	\	\	\	\	\	\	\
	5280MHz	10.89	\	\	\	\	\	\	\
	5320MHz	10.89	\	\	\	\	\	\	\
	5500MHz	10.58	\	\	\	\	\	\	\

	5580MHz	11.31	\	\	\	\	\	\	\
	5700MHz	10.46	\	\	\	\	\	\	\
	5720MHz	10.62	\	\	\	\	\	\	\

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11ac-VHT20 mode

Mode	Frequency	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11ac (VHT20)	5180MHz	10.66	\	\	\	\	\	\	\	\
	5200MHz	10.75	\	\	\	\	\	\	\	\
	5240MHz	10.66	\	\	\	\	\	\	\	\
	5260MHz	10.66	\	\	\	\	\	\	\	\
	5280MHz	10.46	\	\	\	\	\	\	\	\
	5320MHz	10.61	\	\	\	\	\	\	\	\
	5500MHz	10.32	\	\	\	\	\	\	\	\
	5580MHz	10.34	\	\	\	\	\	\	\	\
	5700MHz	10.49	\	\	\	\	\	\	\	\
	5720MHz	10.56	\	\	\	\	\	\	\	\

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11n-HT40 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz	10.43	\	\	\	\	\	\	\
	5230MHz	10.21	\	\	\	\	\	\	\
	5270MHz	10.08	\	\	\	\	\	\	\
	5310MHz	10.51	\	\	\	\	\	\	\
	5510MHz	10.53	\	\	\	\	\	\	\
	5550MHz	10.40	\	\	\	\	\	\	\
	5670MHz	10.23	\	\	\	\	\	\	\
	5710MHz	10.66	\	\	\	\	\	\	\

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11ac-VHT40 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT40)	5190MHz	10.60	\	\	\	\	\	\	\	\	\
	5230MHz	10.51	\	\	\	\	\	\	\	\	\
	5270MHz	10.42	\	\	\	\	\	\	\	\	\
	5310MHz	10.45	\	\	\	\	\	\	\	\	\
	5510MHz	10.41	\	\	\	\	\	\	\	\	\
	5550MHz	10.39	\	\	\	\	\	\	\	\	\
	5670MHz	10.01	\	\	\	\	\	\	\	\	\
	5710MHz	10.33	\	\	\	\	\	\	\	\	\

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

802.11ac-VHT80 mode

Mode	Frequency	Test Result (dBm)									
		Data Rate									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
802.11ac (VHT80)	5210MHz	9.74	\	\	\	\	\	\	\	\	\
	5290MHz	10.37	\	\	\	\	\	\	\	\	\
	5530MHz	10.41	\	\	\	\	\	\	\	\	\
	5610MHz	10.28	\	\	\	\	\	\	\	\	\
	5690MHz	10.04	\	\	\	\	\	\	\	\	\

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

The duty cycle of all mode are 100%.

13:52:06 05.03.2024

Maximum output Power：11a 5180

Conclusion: PASS

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	11
	5250MHz~5350MHz	11
	5470MHz~5725MHz	11

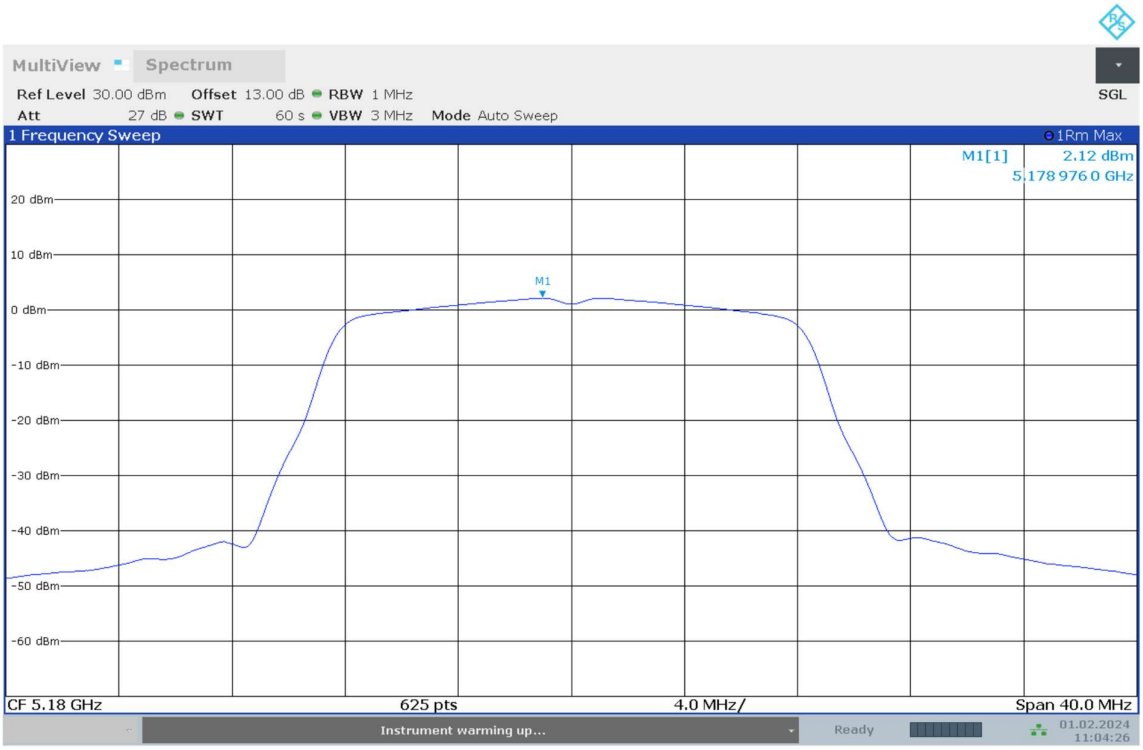
The output power measurement method Section F is made according to KDB 789033

EUT ID: UT03a

Measurement Results:

Mode	Frequency	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	2.12	P
	5200 MHz	2.31	P
	5240 MHz	2.35	P
	5260 MHz	2.57	P
	5280 MHz	2.22	P
	5320 MHz	1.78	P
	5500 MHz	1.56	P
	5580 MHz	1.72	P
	5700 MHz	1.98	P
	5720 MHz	1.43	P
802.11n HT20	5180 MHz	-0.19	P
	5200 MHz	-0.89	P
	5240 MHz	-0.52	P
	5260 MHz	-0.66	P
	5280 MHz	-0.50	P
	5320 MHz	-0.49	P
	5500 MHz	-0.73	P
	5580 MHz	-0.71	P
	5700 MHz	-1.22	P
	5720 MHz	-1.18	P
802.11n HT40	5190 MHz	-3.51	P
	5230 MHz	-3.64	P
	5270 MHz	-3.46	P
	5310 MHz	-3.26	P
	5510 MHz	-3.85	P
	5550 MHz	-3.80	P
	5670 MHz	-4.14	P
	5710 MHz	-4.56	P
802.11ac VHT80	5210 MHz	-7.46	P
	5290 MHz	-7.15	P

	5530 MHz	-6.44	P
	5610 MHz	-6.82	P
	5690 MHz	-7.58	P



Peak Power Spectral Density:11a 5180

Conclusion: PASS

A.4. 26dB Emission Bandwidth (conducted)

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.403 (i)	/

The measurement is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

EUT ID: UT03a

Measurement Result:

Mode	Frequency	26dB Emission Bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.1	19.72	P
	5200 MHz	Fig.2	19.72	P
	5240 MHz	Fig.3	19.72	P
	5260 MHz	Fig.4	19.84	P
	5280 MHz	Fig.5	19.84	P
	5320 MHz	Fig.6	19.72	P
	5500 MHz	Fig.7	19.68	P
	5580 MHz	Fig.8	19.80	P
	5700 MHz	Fig.9	19.72	P
	5720 MHz	Fig.10	19.68	P
802.11n HT20	5180 MHz	Fig.11	20.00	P
	5200 MHz	Fig.12	20.08	P
	5240 MHz	Fig.13	19.92	P
	5260 MHz	Fig.14	20.16	P
	5280 MHz	Fig.15	20.12	P
	5320 MHz	Fig.16	20.16	P
	5500 MHz	Fig.17	20.20	P
	5580 MHz	Fig.18	20.24	P
	5700 MHz	Fig.19	20.04	P
	5720 MHz	Fig.20	20.00	P
802.11n HT40	5190 MHz	Fig.21	40.24	P
	5230 MHz	Fig.22	40.64	P
	5270 MHz	Fig.23	40.40	P
	5310 MHz	Fig.24	40.72	P
	5510 MHz	Fig.25	40.88	P
	5550 MHz	Fig.26	40.56	P
	5670 MHz	Fig.27	40.40	P
	5710 MHz	Fig.28	40.48	P
802.11ac	5210MHz	Fig.29	81.60	P

VHT80	5290MHz	Fig.30	81.60	P
	5530MHz	Fig.31	81.28	P
	5610 MHz	Fig.32	81.44	P
	5690MHz	Fig.33	81.60	P

Test graphs as below:

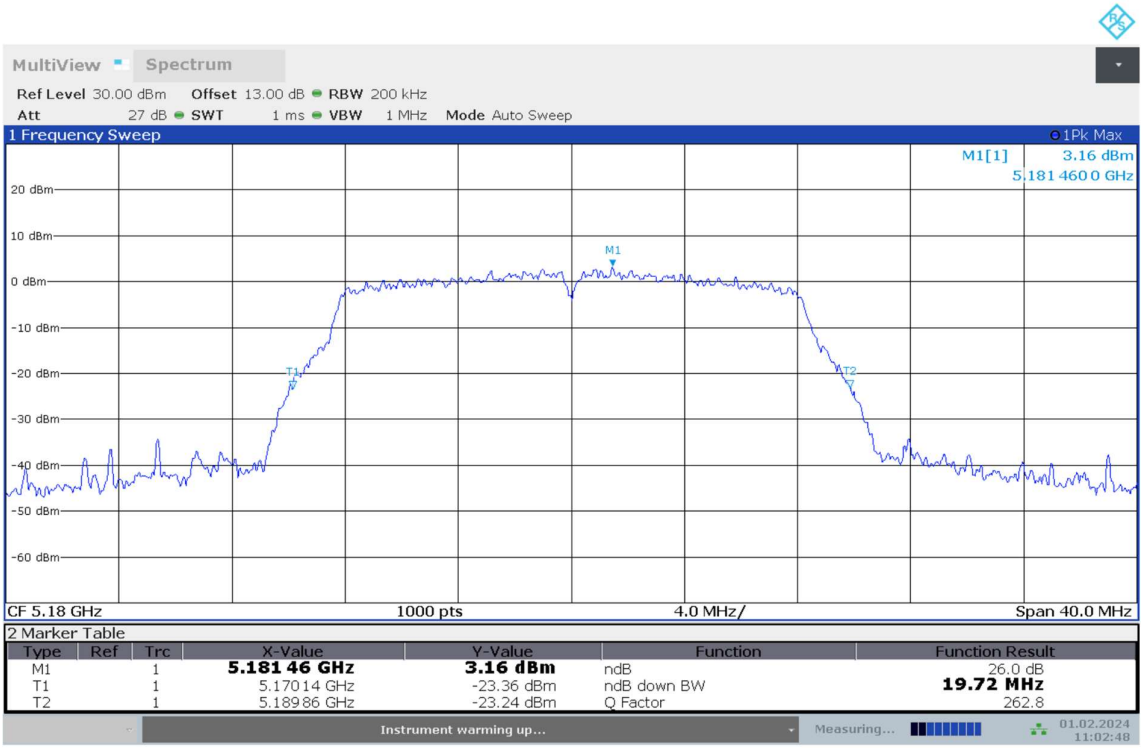


Fig.1 26dB Emission Bandwidth (802.11a, 5180MHz)

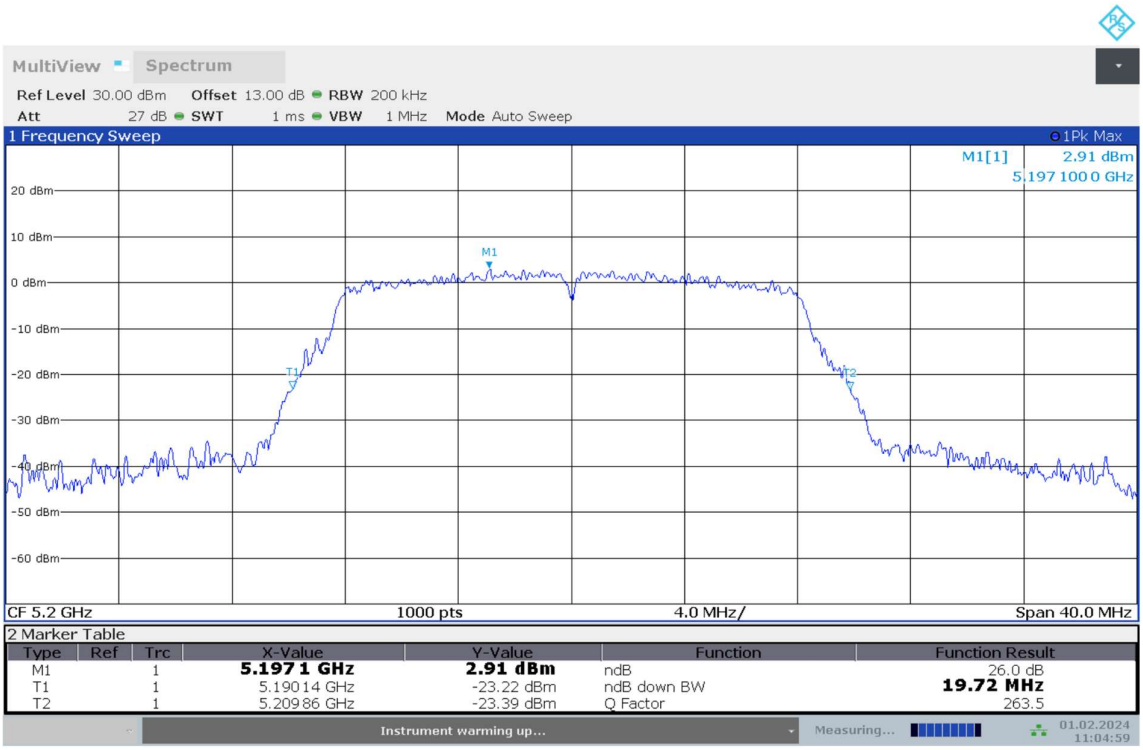


Fig.2 26dB Emission Bandwidth (802.11a, 5200MHz)

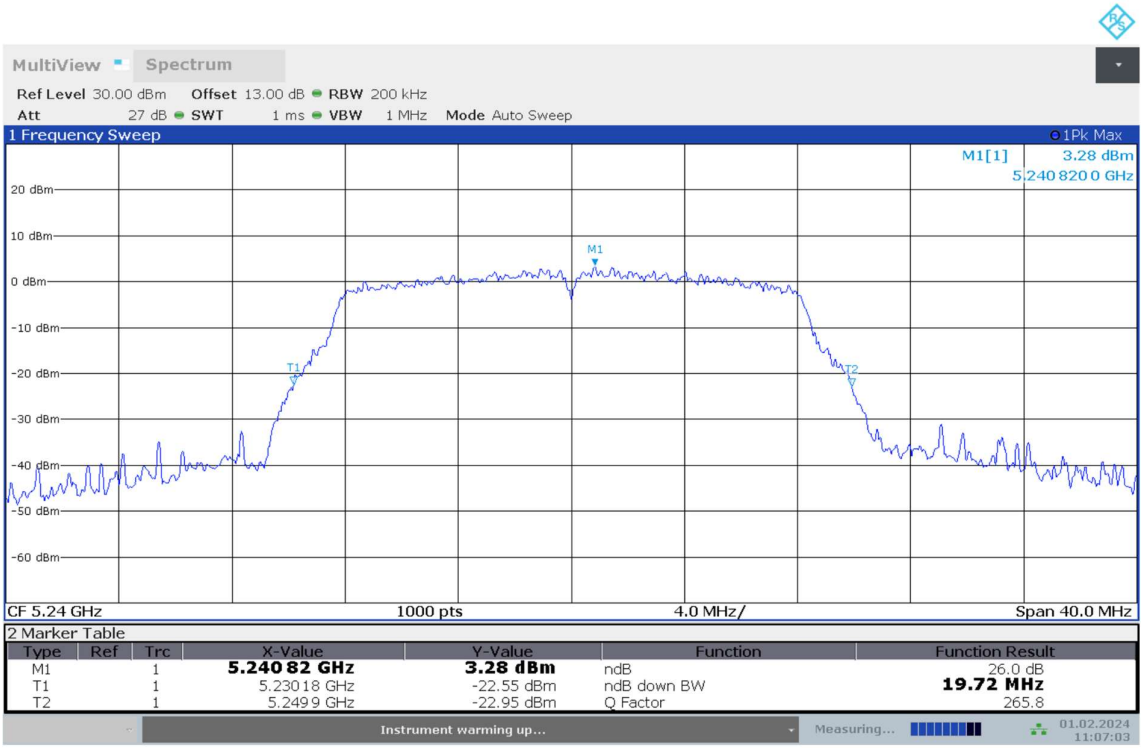


Fig.3 26dB Emission Bandwidth (802.11a, 5240MHz)

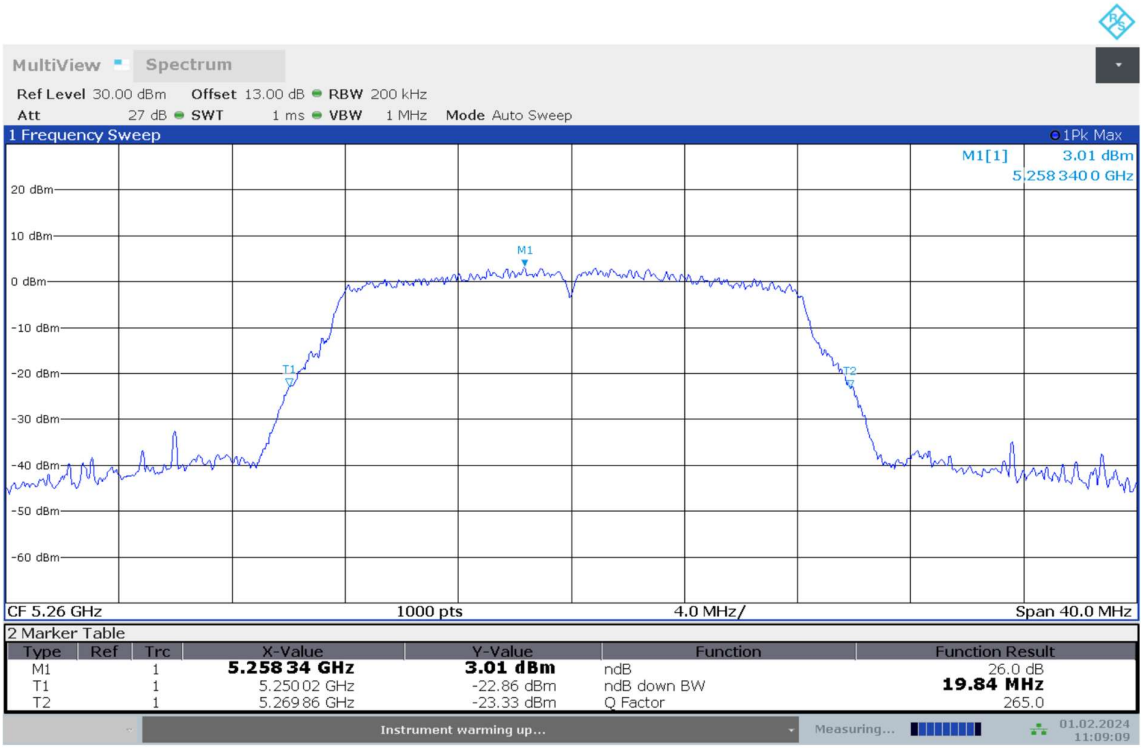


Fig.4 26dB Emission Bandwidth (802.11a, 5260MHz)

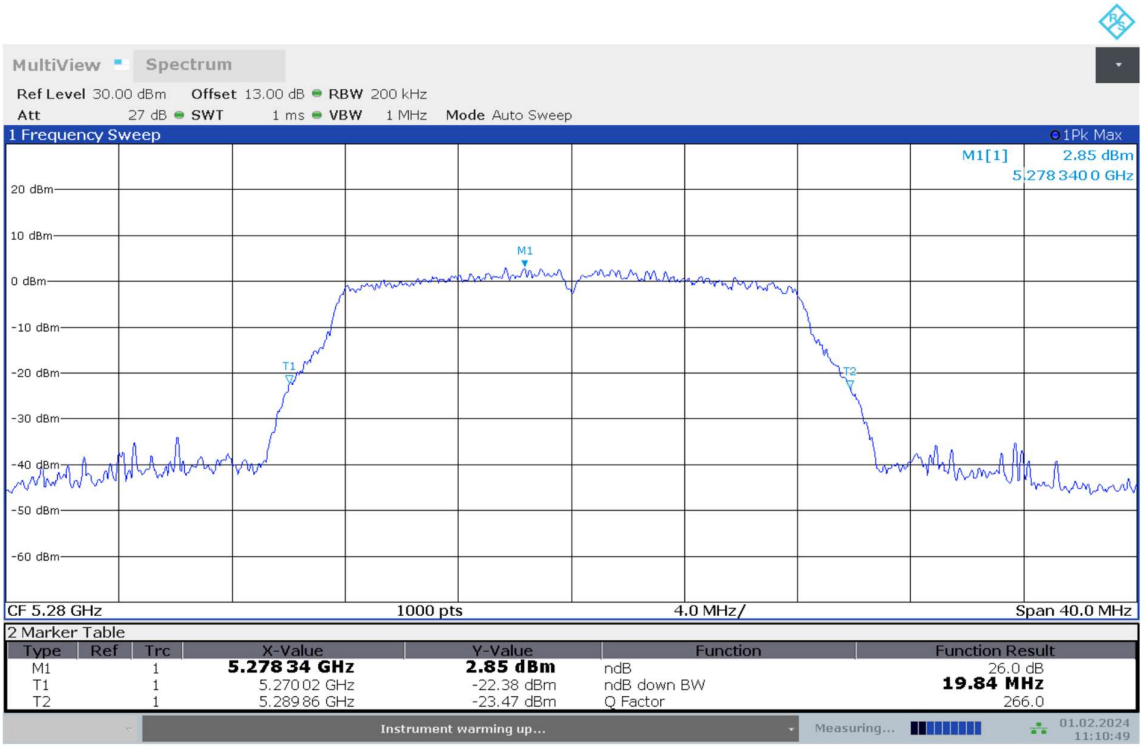


Fig.5 26dB Emission Bandwidth (802.11a, 5280MHz)

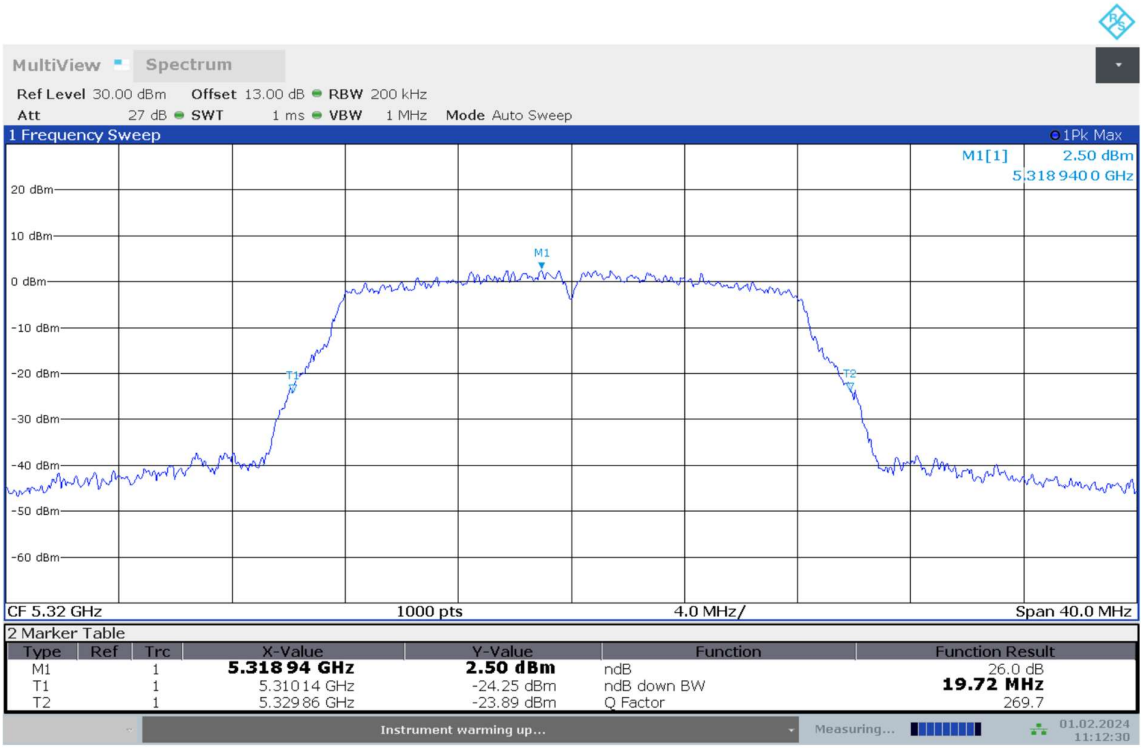


Fig.6 26dB Emission Bandwidth (802.11a, 5320MHz)

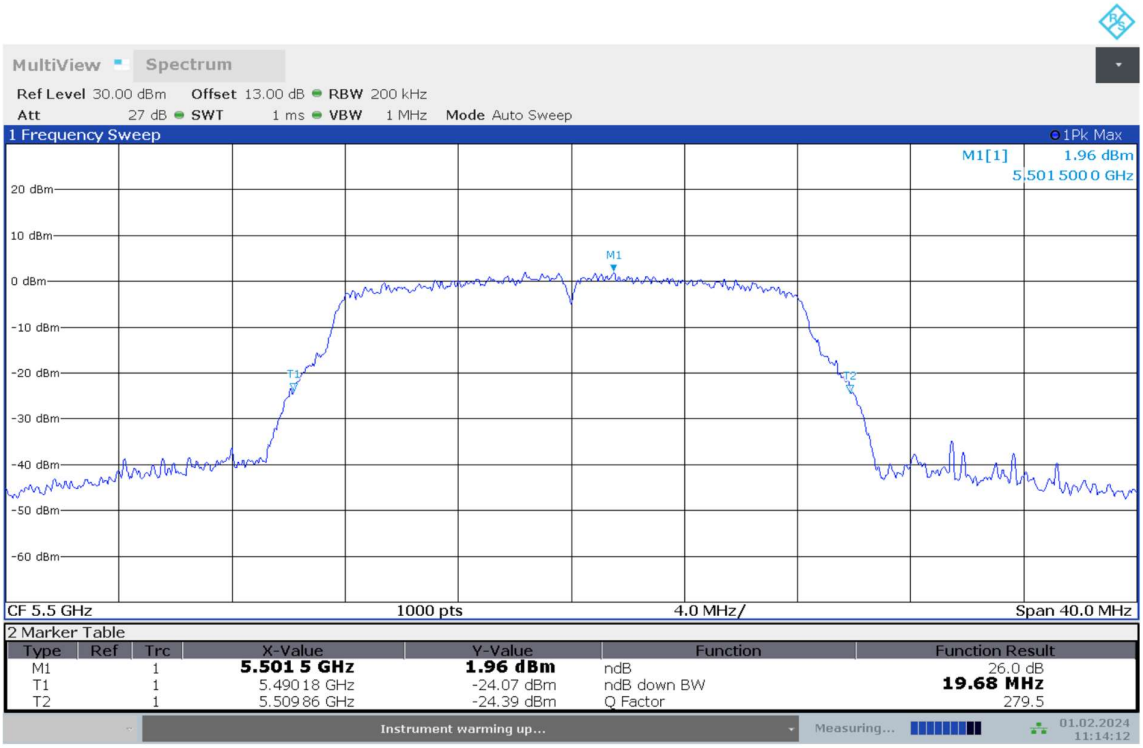


Fig.7 26dB Emission Bandwidth (802.11a, 5500MHz)

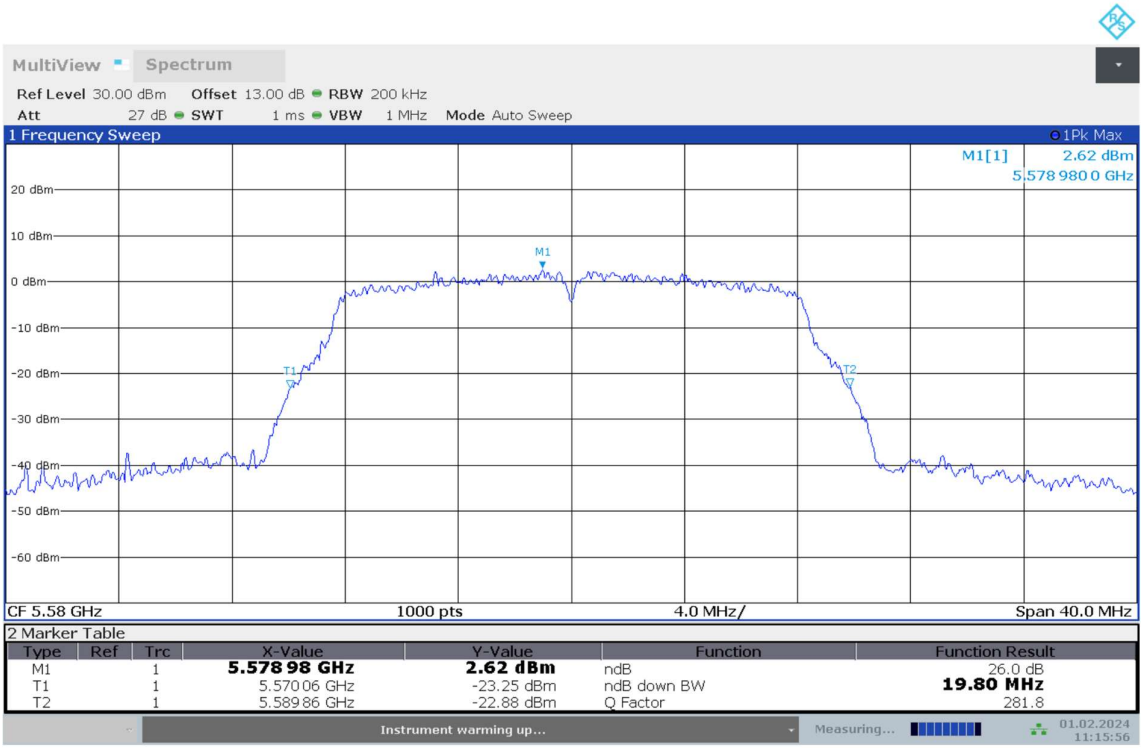


Fig.8 26dB Emission Bandwidth (802.11a, 5580MHz)